

ABSTRACT OF THE DISCLOSURE

A transcritical refrigeration system includes a compressor, a gas cooler, an expansion device, and an evaporator. Refrigerant is circulated through the closed circuit system. Preferably, carbon dioxide is used as the refrigerant. A fan moves outdoor air that exchanges heat with the refrigerant across the evaporator. The speed of the fan is regulated to regulate the evaporator pressure and to adapt the evaporator to different environmental conditions to achieve the optimal coefficient of performance. During high ambient conditions, the fan speed is decreased, decreasing the refrigerant mass flowrate in the system. The energy exchange per unit mass of the refrigerant in the gas cooler increases and the work of the fan decreases, increasing the coefficient of performance of the system. During low ambient conditions, the mass flowrate of the system is low and there is more heat transfer thermal resistance on the refrigerant side at the evaporator. The speed of the fan is lowered to decrease the work of the fan. Therefore, the coefficient of performance increases.

N:\CARRIER\p0213\patent\213application.doc